Amendments

In the claims:

At claims 2-7 and 22-24, line 1 delete "1" and substitute therefore - - 31 - -;

At claim 8, line 1 delete "8" and substitute therefore - - 31 - -;

Add the following new claims 29-31;

29) (New) A process for the production of microcellular nanocomposite or molecular-composite polymer foam shape comprising:

a) compression molding a nanocomposite or molecular-composite polymer to be foamed into a consolidated shape comprising up to about 30 weight percent of a filler selected from the group consisting of chopped glass fibers, carbon fibers, metallic fibers, aramid fibers, ceramic whiskers, ceramic fibers and calcium carbonate powder;

b) saturating the consolidated shape with an inert gas at an elevated pressure and at a temperature above the glass transition temperature of said polymer;

c) fully or partially releasing the pressure; and

d) controllably quenching said polymer shape to a temperature below the glass transition temperature of the polymer.

30) (New) A process for the production of a microcellular nanocomposite or molecular-composite polymer foam shape comprising:

a) compression molding a nanocomposite or molecular-composite polymer selected from the group consisting of blends of nanofibers or nano powders with a polymer and polyhedral oligomeric silsesquioxanes into a consolidated shape;

b) saturating the consolidated shape with an inert gas at an elevated pressure and at a temperature above the glass transition temperature of said polymer;

c) fully or partially releasing the pressure; and

d) controllably quenching said polymer shape to a temperature below the glass transition temperature of the polymer.

31) (New) A process for the production of a microcellular nanocomposite or molecular-composite polymer foam shape comprising:

a) compression molding a molecular-composite polymer comprising rigid rod polymer molecules dispersed in a matrix of a flexible coil polymer at the molecular level.

b) saturating the consolidated shape with an inert gas at an elevated pressure and at a temperature above the glass transition temperature of said polymer;

c) fully or partially releasing the pressure; and

d) controllably quenching said polymer shape to a temperature below the glass transition temperature of the polymer.